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Cmace
group consisting of aniline, *o*-phenylenediamine, *m*-phenylenediamine, *p*-phenylenediamine, *o*-aminophenol, *m*-aminophenol, *p*-aminophenol, 2-amino-4-nitrophenol, 2-aminophenol-4-sulfonamide, and 1,8-diaminonaphthalene.

REMARKS

The Present Invention

The present invention relates to a polybenzazole article that comprises a polybenzazole and a light-resisting agent.

The Pending Claims

Claims 1-3 and 6 are currently pending. Reconsideration of the pending claims is respectfully requested.

Amendments to the Specification and Claims

The specification has been amended to correct a typographical error regarding the compound 2-aminophenol-4-sulfonamide. This is an obvious typographical error since without naming the phenol moiety, the reference numbers 2 and 4 have no basis. The correct chemical name appears in priority document JP 036314/1999, of which a partial English translation is provided herewith.

The claims have been amended so as to more particularly point out and distinctly claim the invention. In particular, claim 1 has been amended to recite the correct chemical name of 2-aminophenol-4-sulfonamide. As discussed above, this amendment is to correct a typographical error. No new matter has been added by way of these amendments. The precise amendments to the specification and claims, as well as the text of the pending claims as amended, are set forth on attachments hereto.

Summary of the Office Action

The Examiner rejects claims 1-3 and 6 under 35 U.S.C. § 103(a) as obvious in view of So et al. (U.S. Patent 5,552,221).

Discussion of the Section 103 Rejection

According to the Office Action, So et al. discloses a polybenzazole article comprising polybenzazole and a naphthol dye. The Examiner concedes that So et al. does not disclose a polybenzazole article with the light-resisting agents recited in the pending claims. The Examiner alleges, however, that So et al. discloses the use of naphthols that absorb light with

a wavelength of 300-600 nm and that this disclosure would lead one of ordinary skill in the art to arrive at the present invention.

So et al. discloses a naphthol dye compound that absorbs light at a wavelength of about 300 nm to about 600 nm. However, naphthol (also known as 1-hydroxynaphthalene or 2-hydroxynaphthalene) has a structure that is completely different than any of the light resisting agents recited in the pending claims. In comparison, the light resisting agents of the present invention all contain an amino moiety. More specifically, aniline, *o*-phenylenediamine, *m*-phenylenediamine, *p*-phenylenediamine, *o*-aminophenol, *m*-aminophenol, *p*-aminophenol, 2-amino-4-nitrophenol, 2-aminophenol-4-sulfonamide all have an amino moiety and benzene core structure. While 1,8-diaminonaphthalene of the present invention has a naphthalene core structure, similar to naphthol, the substituent (amino *cf.* hydroxy), the number of substituents (2 *cf.* 1), and position of the substituents (1 and 8 positions *cf.* 1 or 2 position) are all different compared to the naphthol dye disclosed by So et al.

The Examiner contends that "it would have been obvious to one of ordinary skill in the art to select the naphthols, as disclosed in the reference, to replace said light resisting agent of the claims since they have been shown to be effective in a similar system" (see page 2, last paragraph, of Office Action). However, to do what the Examiner suggests would not result in the present invention. To "select the naphthols" would not lead the ordinarily skilled artisan to select one of the light-resisting agents of the present invention. As detailed above, naphthol and 1,8-diaminonaphthalene are not and cannot be considered chemically or structurally equivalent. At best, one might select a substituted naphthol to use as a light-resisting agent; however, the present invention does not recite the use of substituted naphthols.

Therefore, nothing in So et al. would motivate one of ordinary skill in the art to modify the disclosure therein in order to arrive at the present invention. Moreover, the Examiner does not point to a prior art teaching or suggestion to modify the polybenzazole article disclosed in So et al. in the manner necessary to provide the present invention, namely a polybenzazole article comprising a light resisting agent selected from the group consisting of aniline, *o*-phenylenediamine, *m*-phenylenediamine, *p*-phenylenediamine, *o*-aminophenol, *m*-aminophenol, *p*-aminophenol, 2-amino-4-nitrophenol, 2-aminophenol-4-sulfonamide, and 1,8-diaminonaphthalene. Accordingly, the present invention, as defined by the pending claims, must be considered to be unobvious in view of So et al. Applicants respectfully request that the rejection be withdrawn.



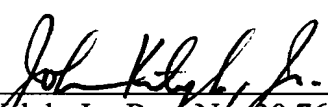
In re Appln. of Kodama et al.
Application No. 09/502,834

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Conclusion

The application is considered to be in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,



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Date: December 4, 2002

CERTIFICATE OF MAILING

I hereby certify that this RESPONSE TO OFFICE ACTION (along with any documents referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, Washington, D.C. 20231.

Date: December 4, 2002





PATENT
Attorney Docket No. 203924

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Kodama et al.

Application No. 09/502,834

Filed: February 11, 2000

For: POLYBENZAZOLE ARTICLE
AND PRODUCTION METHOD
THEREOF

Art Unit: 1711

Examiner: D. Truong

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AMENDMENTS TO SPECIFICATION AND CLAIMS MADE IN
RESPONSE TO OFFICE ACTION DATED SEPTEMBER 6, 2002

*(Deletions are indicated by bracketed text,
while insertions are indicated by underlined text)*

IN THE SPECIFICATION:

Please replace the paragraph on page 11, lines 24-31 with the following:

A black solution was obtained by adding a small amount (less than about 1000 ppm) of a sodium hypochlorite solution to an aqueous solution of [2-amino-4-sulfonamide] 2-aminophenol-4-sulfonamide (5% by weight) at 50°C, and the yarns prepared according to the method described in Example 1 were immersed therein for 60 seconds after neutralization step. The yarns were washed with water for 10 seconds and dried at 30°C for 120 seconds. The obtained fiber was folded 3 times and evaluated for resistance to light. The results are shown in Table 1.

IN THE CLAIMS:

Please amend claim 1 as follows:

1. (Thrice Amended) A polybenzazole article superior in light resistance, which comprises a polybenzazole and a light-resisting agent that allows for a regular reflectance of the article of not more than 30% in not less than 30% of the wavelength region of from 450 nm to 700 nm, wherein the light-resisting agent is at least one member selected from the group consisting of aniline, *o*-phenylenediamine, *m*-phenylenediamine, *p*-phenylenediamine, *o*-aminophenol, *m*-aminophenol, *p*-aminophenol, 2-amino-4-nitrophenol, [2-amino-4-sulfonamide] 2-aminophenol-4-sulfonamide, and 1,8-diaminonaphthalene.

Partial English translation of Example 8 of Japanese Patent
Application No. 036314/1999

[0034]

<Example 8>

A black solution was obtained by adding a small amount of a sodium hypochlorite solution to an aqueous solution of 2-aminophenol-4-sulfonamide (5% by weight) at 50°C, and the yarns prepared according to the method described in Example 1 were immersed therein for 60 seconds after neutralization step. The yarns were washed with water for 10 seconds and dried at 300°C for 120 seconds. The obtained fiber was folded 3 times and evaluated for resistance to light. The results are shown in Table 1.